U.S. Department
of Transportation
**Federal Aviation Administration**

# General Aviation Airworthiness Alerts

**AC No. 43-16**


**ALERT NO. 217**
**AUGUST 1996**

## Improve Reliability-Interchange Service Experience

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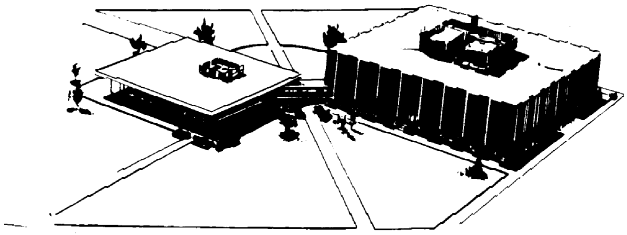
**U.S. DEPARTMENT OF TRANSPORTATION**
**FEDERAL AVIATION ADMINISTRATION**
**WASHINGTON, DC 20590**

# GENERAL AVIATION AIRWORTHINESS ALERTS



**FLIGHT STANDARDS SERVICE**
Mike Monroney Aeronautical Center

The General Aviation Airworthiness Alerts provide a common communication channel through which the aviation community can economically interchange service experience and thereby cooperate in the improvement of aeronautical product durability, reliability, and safety. This publication is prepared from information submitted by those of you who operate and maintain civil aeronautical products. The contents include items that have been reported as significant, but which have not been evaluated fully by the time the material went to press. As additional facts such as cause and corrective action are identified, the data will be published in subsequent issues of the Alerts. This procedure gives Alerts' readers prompt notice of conditions reported via Malfunction or Defect Reports. Your comments and suggestions for improvement are always welcome. Send to: FAA; ATTN: Maintenance Support Branch, AFS-640; P.O. Box 25082; Oklahoma City, OK 73125-5029.

## AIRCRAFT

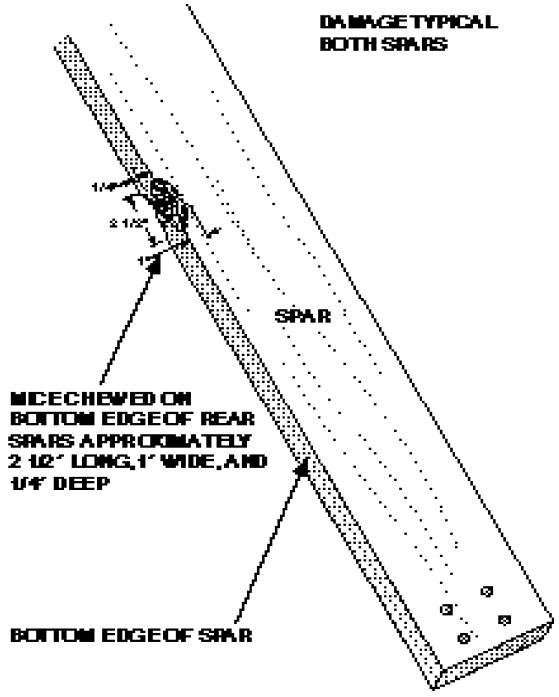
### AERONCA

**Aeronca Model 7AC-65 Champ** — **Wing Spar Damage 5711**

After removing the fabric covering from the left and right wings, damage was found on both of the rear spars.

The damage was located approximately half-way between the wing root and the strut attachment fitting. The submitter stated the damage was caused by "mice" chewing on the wood spars. (Refer to the following illustration.) The "chew marks" had a coat of varnish covering them which indicated the damage existed when the wings were covered in 1982. The extent of this damage required replacement of both rear spars.

Part total time-3,721 hours.



**Aeronca** **Electric Fuel Pump**
**Model 7 KCAB** **Failure**
**Citabria** **2822**

It was reported that the electric fuel pump would not develop output pressure.

An investigation revealed the seal had failed allowing fuel to vent through the electric motor. The submitter stated this assembly had been installed as original equipment, which did not have a case vent and drain tube installed. It was recommended that owners of older aircraft, which have this fuel pump configuration, check for fuel leakage and the presence of a case vent and drain. This condition presents a very serious fire hazard and deserves immediate attention.

Part total time not reported.

## AEROSPATIALE

**Aerospatiale** **Landing Gear**
**Model TB20** **Failure**
**Trinidad** **3230**

During a landing approach, the landing gear did not respond when the pilot attempted to lower the gear. When the emergency system was used, both of the main landing gears locked in the "down" position, which left the nose gear unlocked. The nose gear collapsed during landing.

An inspection revealed the cause of failure of the normal gear extension system was failure of a relay (P/N Z00.N7733690395) in the "closed" position. Failure of the nose gear, during operation of the emergency system, was the result of one of the two nose gear emergency compensating actuators (P/N Z00.N7070110709) losing its charge.

Part total time not reported.

## BEECH

**Beech** **Improperly Wired**
**Model C23** **Instrument Light**
**Sundowner** **Dimmer Control Unit**
**3310**

A new instrument light-dimmer control unit (P/N 108-364011-11) was received from the manufacturer, and it was improperly wired.

The manufacturer was informed of this problem, and a check of their stock revealed all of the units were in the same condition. Beech corrected the problem by purging their stock and replacing it with properly wired units. The submitter stated a well-founded concern that other like units may be stocked by Fixed Base Operators (FBO), distributors, or other parts dealers. If you have these units in stock, the units should be tested to ensure they are correctly wired.

Part total time-0 hours.

**Beech** **Nose Landing Gear**
**Model C24R** **Collapse**
**3230**

The pilot reported the nose landing gear would not lock in the "down" position, and all attempts to lock down the nose gear failed. The nose gear collapsed during landing.

An inspection disclosed a wire going to the down-lock switch was broken at a splice, and caused the hydraulic pump to stop before the nose gear was fully in the "down-and-locked" position. The submitter suggested that the vinyl sleeve (around this splice area) be periodically changed to prevent it from stiffening. The splice area should be closely checked during scheduled inspections.

Part total time-2,008 hours.

**Beech Model F33A Bonanza** — **Landing Gear Failure 3230**

The pilot reported the landing gear failed to extend during a landing approach. It was necessary to use the emergency extension system to lock the gear in the "down" position.

During an investigation, the landing gear position switch (P/N MS 25125-E3) was found stuck in the "up" position. This effectively disabled the normal landing gear extension system. Proper care of this type switch should include regular inspection and lubrication in accordance with the manufacturer's technical data.

Part total time-5,212 hours.

**Beech Model A35 Bonanza** — **Carry-Through Structure Corrosion 5341**

During an annual inspection, the auxiliary fuel tank was removed to accommodate repair of the floor boards on which it was located.

When the tank and floor boards were removed, severe corrosion was found on the rear spar carry-through structure. The severity of the corrosion required replacement of the spar carry-through. The submitter stated this area is not accessible unless the floor boards are removed. It was suggested that inspection panels be installed in this area to allow visual inspections. This suggestion has been sent to the responsible FAA aircraft certification office for action.

Part total time-4,505 hours.

**Beech Model UC-45J (BE18)** — **In-flight Fuel Leak And Fire 2820**

Information for the following article was furnished by Mr. Jeff Kennedy, of the National Transportation Safety Board.

The pilot reported that shortly after takeoff, the right engine fuel pressure dropped to "zero," and the engine failed when the electric boost pump was switched to the "off" position. The pilot turned the boost pump back on and returned to the departure airport. While landing, the tower informed the pilot that the right engine was on fire. At this point, the cockpit filled with smoke and directional control was lost. The aircraft departed the runway and came to rest in a canal. The pilot suffered from smoke inhalation.

An examination revealed the right engine-driven fuel pump operated properly and was not the cause of this accident. Further investigation disclosed the fire originated in the right wheel well, aft of the right engine firewall. A rubber pressurized fuel line, connecting the carburetor to the oil dilution valve, was found split. This was determined to be the fuel source of the fire. The oil dilution valve is located on the aft side of the firewall, in the upper outboard area. An examination of the rubber line revealed it was weathered and brittle. The operator stated: "This was not an area that was inspected because the oil dilution system was not used!"

During each inspection, maintenance technicians should inspect the condition of all fluid-carrying lines, and ensure lines to inoperative or unused systems are included.

Part total time-4,254 hours.

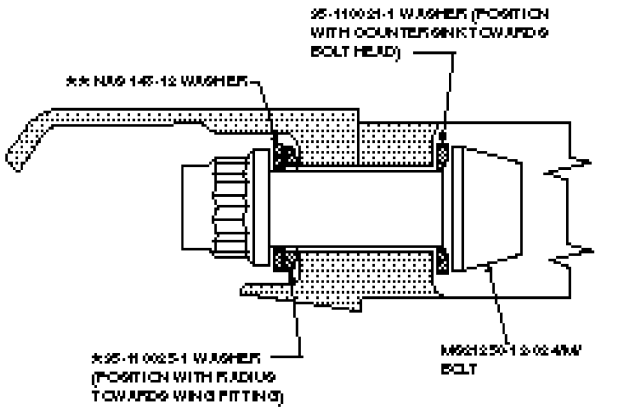
**Beech Model 58 Baron** — **Wing Attachment 5740**

While performing a 5-year wingbolt and fitting inspection, improper hardware was found installed.

At some point, both the left and right lower aft radius washers (P/N 95-110025-1) were replaced with washers (P/N NAS 143-12) which were not beveled on the outer edge. (Refer to the following illustration.) When the wing attachment bolts were torqued, the outer edge of these washers cut into the radius of the wing attachment fittings (P/N's 95-110017-1, left and 95-110017-2,

right). Care should be taken during assembly to ensure the correct parts are installed in the proper order.

Part total time not reported.




**Beech**
**Model 58P**
**Baron**

**Turbocharger**
**Coupling Clamp**
**Crack**
**8120**

During maintenance on the engine exhaust system (which required removal of the turbocharger), a coupling clamp was found cracked.

The submitter speculated the clamp had been excessively torqued during a prior installation. Failure of this clamp would allow hot engine exhaust gases to be released into the engine compartment which could cause a fire or heat damage. The submitter recommended closely inspecting all “V-band” type clamps during maintenance and scheduled inspections. Some defects may not be detected without removal of the clamps.

Part total time not reported.

**Beech**
**Model 200**
**King Air**

**Fuel Fumes In**
**The Cockpit**
**2810**

During a preflight inspection, the pilot reported fuel fumes in the cockpit and cabin.

An inspection disclosed the source of the fumes was due to fuel seeping into the cabin through the fuel probe wiring conduit. During interviews with several people from the FBO, it was learned the aircraft had been filled with fuel the previous day. The outside air temperature was very cold, and after refueling, the aircraft was moved into a warm hangar. Further investigation revealed there was debris in the check valve (P/N 101-389011-33), which prevented it from fully closing. The submitter speculated that fuel expansion and the debris in the check valve were responsible for this defect.

Aircraft total time-8,417 hours.

**Beech**
**Model B300**
**King Air**

**Entrance Door**
**Failure**
**5210**

During cruise flight at 28,000 feet, the flightcrew heard a loud noise, and the “door unsafe” light illuminated. Proper emergency procedures were followed, and a safe landing was made.

An investigation disclosed the top forward cabin door latch hook was not engaged. After disassembly of the door, the clevis pin (on which the hook pivots) was found broken. The cause of this failure could not be determined. After installing a new clevis pin, an operational test proved satisfactory. The submitter recommended a life limit be established for the door hook clevis pins.

Part total time-483 hours.

**Beech Model 2000A Star Ship** — **Throttle Failure 7603**

The pilot stated the left engine became unresponsive to engine power lever movements during flight. The engine was secured, and an uneventful landing was made.

During a system inspection, it was found that the throttle ball swivel assembly had backed off from the threaded rod-end on the cable. The swage stakes came loose allowing the rod-end to back off and disengage the throttle. The submitter suggested some means be devised to safety this assembly, and this type of occurrence would be prevented.

Part total time-1,364 hours.

## CESSNA

**Cessna Model 172 Skyhawk** — **Reduced Takeoff Engine Power 2820**

The pilot reported that it was not possible to obtain maximum engine power during takeoff.

An investigation disclosed the engine fuel primer was "unlocked," which was supplying additional fuel to the engine. This caused an exceptionally rich mixture and prevented the development of maximum takeoff power. It was suggested that operators of aircraft with plunger-type engine primers, ensure the rotatable locking device is properly secured, prior to completion of the before-takeoff checklist.

Part total time not reported.

**Cessna Model 172 Skyhawk** — **Restricted Rudder Pedal Movement 2720**

When the aircraft was delivered to maintenance, for an annual inspection, the owner complained the steering was very difficult to operate.

During the inspection, the rudder bearing blocks (P/N S1675-1) were found severely corroded. The corrosion was restricting movement of the rudder pedals. There was no evidence of lubrication on the bearing blocks. New bearing blocks were ordered (and received) from the manufacturer. The manufacturer had changed to a nonmetallic material. During scheduled inspections and maintenance, focus should be directed to this area.

Part total time-2,200 hours.

**Cessna Model 172 RG Cutlass** — **Loose Nose Landing Gear Attachment 3221**

During other maintenance operations, with the aircraft on jacks, the nose landing gear was found to have excessive fore-and-aft movement.

When fore-and-aft force was applied by hand, a "rocking motion" of the nose landing gear rear attachment fitting (P/N 2413002-3) was detected. Further investigation revealed that all 20 attachment bolts, used to secure the fitting to the fuselage, were properly torqued; however, the nuts were "bottomed out" on the threads. This allowed the bolts to be rotated by hand and left a gap between the fuselage and the fitting. Evidently, during a previous installation, a washer (P/N 960-10) was omitted from the nut side of each of the 20 fasteners. Use of the proper technical data may have avoided this defect.

Part total time-2,938 hours.

**Cessna Model U206G Stationair** — **Loss of Nosewheel Steering 3250**

While taxiing to the ramp, the pilot reported hearing a loud and abnormal noise, loss of nosewheel steering, and very free movement of the rudder pedals.

An investigation revealed the rod-end (P/N 1260631-1) on the aft steering bungee was broken, and the trim chain was off the sprocket. The submitter stated: "This is the second incidence known to me of this happening on this aircraft. There have been

two other incidences of this on other aircraft." This problem could have been caused by improper ground handling; however, it is more likely that the .25-inch diameter shaft of the rod-end is not strong enough to bear the structural loads imposed during operation.

Part total time-1,068 hours.

**Cessna Model 210M Centurion** — **Cockpit Fuel Leak 2820**

As the result of a similar article (in the April 1996 edition of this publication), the FAA issued four Safety Recommendations (96.054, 96.055, 96.056, and 96.057). The following events are in addition to the findings in April 1996 edition.

During routine maintenance, the odor of fuel was detected in the cockpit.

An investigation revealed the wing flap handle wiring, behind the instrument panel, was wet with fuel. The fuel line (P/N 1200106-263), which runs from the firewall to the fuel pressure gauge was leaking above the flap wiring. The fuel line was chafing against the ADF radio rack and had worn through the thickness of the tube wall. In the past, this dangerous situation has caused fire and loss of life. All maintenance technicians are strongly urged to closely check this area during inspections.

Part total time not reported.

**Cessna Model 310L** — **Nose Landing Gear Failure 3230**

The following article was furnished by Mr. Paul M. Foster, an Aviation Safety Inspector with the FAA's Flight Standards District Office located in Long Beach, California.

> "While investigating an incident involving failure of the nose landing gear to lock in the "down" position, it was found that the nose gear would not go overcenter to the "down-and-locked" position.
>
> Further inspection revealed the nose gear main drive gear tube assembly (P/N 0842120-1 or 0842121-2) was broken, the intermediate gear drive tube assembly (P/N 0740125-3) was bent, and there was evidence of chafing on the bellcrank and the gear tube drive assembly. The submitter speculated that improper rigging may have caused the bending and breakage of the nose gear drive tube assembly. These conditions may have prevented the nose gear from locking in the "down" position. The manufacturer's service manual contains instructions for conducting an inspection of the rigging, and requires this inspection at 100-hour intervals."

Part total time-3,911 hours.

**Cessna Model 320E Skynight** — **Wing Flap Malfunction 2750**

When the aircraft was presented for an annual inspection, the owner reported experiencing a left roll when the flaps were deployed between 0 and 15 degrees.

During the inspection, the cause of this defect was found to be the right inboard wing flap actuating rods (P/N's 0862100-50 and 0862100-51) were bent.

During research of the Airworthiness Directives (ADs) for this aircraft, the placard for maximum airspeed for wing flap deployment was missing. The submitter speculated this maximum speed limitation had been exceeded, causing the actuator rods to bend. The actuator rods, as well as the placard, should be checked during scheduled inspections.

Part total time-3,568 hours.

**Cessna Model 340A** — **Landing Gear Retraction System Failure 3230**

The pilot reported the left main landing gear failed to retract after takeoff. The landing gear

was placed in the "down" position, and a safe landing was made.

An inspection of the landing gear system revealed the left main gear retraction linkage aft fork assembly was broken adjacent to a weld. The retraction tube was cracked in a spiral direction. The submitter speculated metal fatigue in the welded area caused this defect. During each inspection, this area should be given close attention.

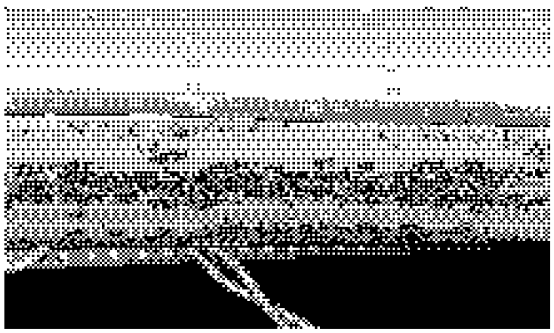
Part total time-5,406 hours.

**Cessna Model 550 Citation** — **Wing Spar Cap Corrosion 5711**

While repairing small wing skin cracks, the skin panel was removed from the right wing (just aft of the landing gear well).

Severe corrosion was discovered on the lower aft wing spar cap. The corroded area extended from the wing root to approximately wing station (WS) 74.5. (Refer to the following illustration.) After removal of the corrosion, in accordance with a Cessna engineering approval, it was found that up to 20 percent of the spar cap thickness had been consumed. The damage depth varied from 10 to 20 percent of the spar cap thickness over this area. A check of the same area on the left wing was performed, and no corrosion was found. The submitter could not offer a reason for the corrosion damage on the left wing spar cap. This area should be checked for corrosion damage during scheduled inspections and maintenance.

Part total time-9,941 hours.



**Cessna Model 650 Citation** — **Tire Failure 3244**

The pilot reported the landing gear "unsafe light" remained illuminated when the gear was retracted after takeoff. A ground observer reported to the pilot that the landing gear appeared to be in the "up-and-locked" position. A safe landing was made.

An inspection disclosed that one of the left main gear tires had outer-bead separation. The left wing flap, and the landing gear uplock switch, were damaged by the loose tread. It was determined this caused the gear "unsafe light" to remain illuminated. The condition of the tires should be checked during preflight inspection and maintenance in this area.

Part total time-231 hours and 145 landings.

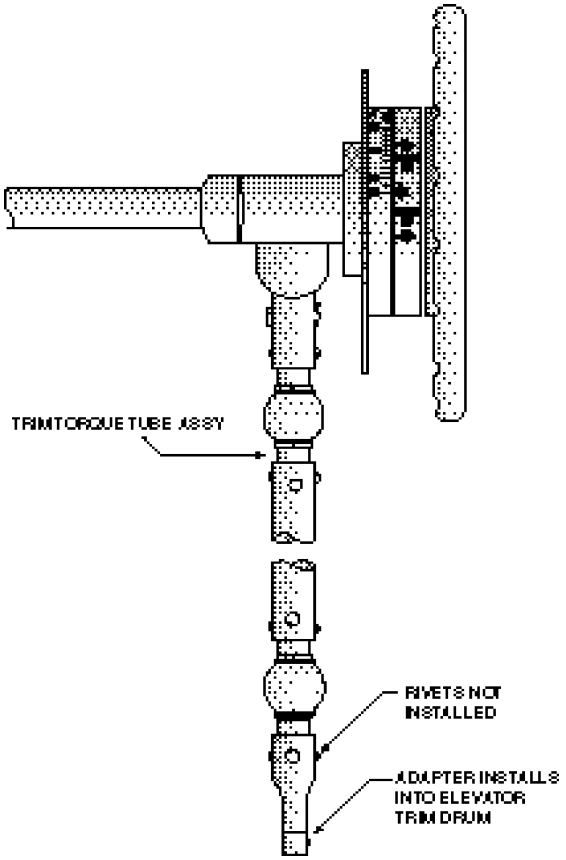
## GULFSTREAM

**Gulfstream Model G-IV** — **Elevator Trim Control Malfunction 2731**

The pilot reported that during cruise flight, the elevator trim ran to the full "noseup" position, and there was no manual control of the system.

An investigation revealed that two rivets were missing from the elevator trim torque tube assembly (P/N 43083-818-2) where it should have been attached to the lower universal drive adapter. (Refer to the following illustration.) This allowed the shaft to turn inside the tube assembly; however, the elevator cable drum was not driven. Since there was no evidence that these two rivets had ever been installed, the submitter speculated they had been omitted during assembly of the aircraft.

Part total time-215 hours.




## LUSCOMBE

**Luscombe**
**Model 8A**
**Silvaire**

**Rudder Cracks**
**5550**

During a scheduled inspection, a crack was found at the rudder attachment point.

The crack was located in the lower rudder hinge attachment flange bracket (P/N 18110). The submitter stated this defect was caused by flexing of the material when the rudder contacted the stops. The extent of the crack, and any related damage, was not given in this report. This area should be closely checked during inspections and maintenance.

Part total time not reported.

## PIPER

**Piper**
**Model PA 24-180**
**Comanche**

**Main Landing Gear**
**Bungee Arm Cracks**
**3230**

During a scheduled inspection, both of the main landing gear bungee arms (P/N's 20846-006 and 20846-007) were found cracked.

The cracks were located at the pin slots and the welded attachment areas. From the available evidence, it appeared the cracks had existed for a long period of time. The submitter speculated "age and fatigue" caused these defects. The only way to be sure cracks do not exist is to remove the bungee arms for a visual inspection.

Part total time not reported.

**Piper**
**Model PA 28-180**
**Cherokee**

**Defective Fuel Tank Plumbing**
**2810**

While replacing the fuel quantity probe gaskets, the fuel tank was removed.

During removal, the flexible fuel hoses (P/N 111417-6-0124) were found weather checked, hard, and brittle. Evidently, the hoses were original equipment, and had a stamped manufacturing date of February 1972. These hoses broke when they were barely flexed.

Numerous articles have been written on this subject, in this publication and other aviation publications. This condition can develop into a very hazardous situation. Everyone is urged to inspect and replace all fuel and other installed hoses, as required.

Part total time-2,670 hours.

**Piper**
**Model PA 28-181**
**Archer**

**Fuel Leak**
**2821**

The aircraft owner reported a persistent fuel stain in the area of the firewall. After several

attempts to remove the stains, a maintenance technician was employed.

During an investigation, it was discovered that a fitting on the fuel strainer assembly was "cross threaded." The fuel line from the fuel selector valve to the fuel strainer was incorrectly formed. After ordering and receiving a new fuel strainer, it was found the fitting threads were of poor quality and there were not enough threads to properly engage the "B-nut." The manufacturer was contacted, and all of their existing stock was found to be defective. Since it is possible that other like aircraft may be fitted with defective parts, this area should be closely checked during inspections and maintenance.

Part total time not reported.

**Piper** **Engine Failure**
**Model PA 28R-200** **6120**
**Arrow**

The pilot reported that during flight, an oil leak developed. The oil supply was depleted, which resulted in engine failure. A safe landing was made.

An investigation determined the propeller control shaft nut had "backed out," allowing the loss of engine oil and "destruction" of the engine. It was found that the propeller control shaft gasket was not properly bent to provide a means to safety the control shaft nut. Care should be taken to insure proper procedures are followed during installations.

Part total time-1,671 hours.

**Piper** **Fuel Pump Failure**
**Model PA 31-350** **2822**
**Chieftain**

The aircraft was delivered to maintenance because of an inoperative fuel pump.

When the old pump was removed, it was found that during the previous installation, "pipe sealer had been used on the inlet and outlet ports." The pump fittings are normally sealed with an "O-ring," and do not require the addition of "pipe sealer." In this case, an excessive amount of sealer had been used and was found in the pump interior. The vanes were coated to the point they were stuck. Good maintenance practice should be followed when installing any part or equipment. If, as in this case, the pump leaked after installation, the cause should be thoroughly investigated.

Part total time-10 hours.

**Piper** **Flight Control**
**Model PA 42-720** **Column Wear**
**Cheyenne** **2701**

During a scheduled inspection, excessive "free play" was noted in the pilot's control column. With the right control column held firm, both fore-and-aft movement, and side-to-side movement of the left control column was found.

During an investigation, it was determined there was excessive wear between the control column's pivot fitting assembly (P/N 58488-06) and the steel interconnect tube (P/N 58024-02). "Hilock" fasteners were used to attach the pivot fitting assembly to the steel interconnect tube which exhibited signs of looseness. The interconnect tube was replaced, and a review of the aircraft maintenance records revealed it had been previously replaced in January 1986. The submitter did not offer a cause for this defect.

Part total time-4,702 hours.

**Piper** **Landing Gear**
**Model PA 44-180** **Failure**
**Seminole** **3251**

Information for the following article was furnished by the FAA's Aircraft Certification Office (ACE-117A), located in Atlanta, Georgia.

> "An investigation of a nose landing gear collapse incident revealed the nose gear was bent and had collapsed aft into the wheel well. The nose gear trunnion was broken, the upper drag link was bent and broken away from the lower drag link, and the steering horn was bent in an upward direction. The steering bungee, steering

rod assembly, and steering cam were not damaged. The bolt and nut, used to secure the steering rod to the steering cam, were missing. Failure of both main landing gear was attributed to the initial nose gear failure.

During investigation of this incident, research of the FAA maintenance data and the manufacturer's data did not reveal a history of problems or failures in this area. It was recommended that inspections of this assembly encompass a check for corrosion and/or wear in the bolt and/or steering cam attachment. If any wear or corrosion is detected, the bolt and nut should be replaced."

Part total time not reported.

**Piper**
**Model PA 46-310P**
**Malibu**

**Engine Mount Deterioration**
**7120**

During compliance with Piper Service Bulletin (SB) 960, the right rear engine mount (P/N J-9613-55) was found badly deteriorated.

The rubber isolator was hard and brittle. The submitter stated this was caused by the close proximity of the engine mount to the engine exhaust system. The excessive heat effectively took the "life" out of the rubber. A heat shield is installed to protect the left rear engine mount; however, the manufacturer's parts catalog does not include a heat shield for the right side. It was suggested the manufacturer develop and make available a heat shield for the right rear engine mount. This report and suggestion has been sent to the responsible FAA aircraft certification office for action.

Part total time not reported.

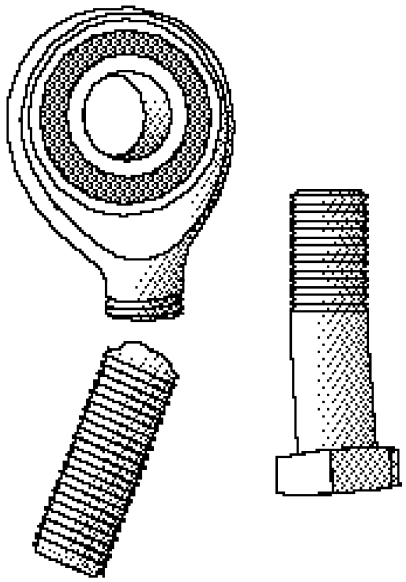
**Piper**
**Model PA 46-310P**
**Malibu**

**Nose Landing Gear Failure**
**3233**

This article resulted from an aircraft incident. The pilot landed on a grass strip runway, which was rough with several soft sand pits. The runway was approximately 2,450 feet long. After conducting his business, the pilot attempted a takeoff; however, after rolling approximately 15 feet, the nose landing gear collapsed.

An investigation revealed the nose landing gear actuator rod-end (P/N 452-853) was broken, and allowed the nose gear to collapse. (Refer to the following illustration.) Visual inspection of the rod-end fracture surface disclosed features typical of bending overload and instantaneous ductile failure. The rod-end had bent approximately 10 degrees before failure occurred. An inspection of the actuator-to-fuselage attachment bolt (P/N 401-508) revealed it was deformed from shear loading between the actuator and the fuselage attachment point.

Part total time not reported.



**Piper**
**Model PA 60-600**
**Aerostar**

**Nosewheel Steering Failure**
**3250**

The pilot reported that during a takeoff roll, the aircraft veered hard to the right. The takeoff was aborted, and differential braking was used to keep the aircraft on the runway until it could be stopped.

An investigation revealed the steering switch (P/N 588-255) failed. The switch was stuck in the "right-turn" position and would not spring back to the center position. The submitter suggested that the switch should be checked for good, strong, and positive "spring back" to the center position.

Part total time not reported.

### VARGA

**Varga Models 2150, 2150A, And 2180** — **Fuel Loss 2810**

Information for the following article was furnished by the FAA's, Aircraft Certification Office (ACE-117A), located in Atlanta, Georgia.

> "There have been several incidents of near fuel exhaustion involving these aircraft. This situation occurs when the aircraft is parked on a sloping ramp with one wing lower than the other and both fuel valves are left in the "on" position.
>
> The fuel will drain from the high wing to the low wing and may begin to siphon overboard when the fuel reaches the level of the vent outlet. Fuel siphoning will continue until the fuel is drained below the level of the vent outlet, fuel pressure in the tank builds up too much to allow venting, the aircraft is moved to a level surface, or at least one of the fuel valves is closed, and a tank cap is loosened to relieve the pressure. Fuel loss may range from a fraction of a gallon to several gallons (depending on the circumstances). In addition to the loss of fuel, this condition presents a very serious fire hazard.
>
> Owners, operators, and maintenance personnel should ensure that both fuel valves are placed in the "off" position when the aircraft is parked. A thorough preflight inspection, including a physical verification of the fuel quantity, will alleviate the possibility of operating the aircraft with unknown fuel quantity."

Part total time not reported.

## HELICOPTERS

### AMERICAN EUROCOPTER

**American Eurocopter Model AS-350B Ecureul** — **Air-Conditioner Belt Delaminated 2121**

While installing a new air-conditioner belt (P/N 060018), it was discovered there was no "direction-of-rotation arrow" on the belt. The second problem arose when the aircraft was started after the belt replacement. The belt broke and was found delaminated at the glue seam; however, an inspection of the belt revealed that it had been properly installed.

The submitter recommended that a "direction-of-rotation arrow" should be printed on the belt; and a "tracking" method should be initiated to track these belts by the batch number.

Part total time-0 hours.

### BELL

**Bell Model 206L-3 Long Ranger** — **Rotor Brake Lining Loose 6321**

The mounting bar came loose from the lining, which allowed it to float between the piston and the brake disk. When the rotor brake was applied, the lining was forced down between the disk and the caliper, and the brake was then set, as if it was "engaged."

Part total time not submitted.

**Bell**
**Model 206L-3**
**Long Ranger III**

**Mast Bearing Nut Loose**
**6230**

While removing the swashplate, maintenance personnel discovered the mast bearing retention nut was loose (only "hand tight"). The submitter stated there have been several instances where these mast nuts, on Models 206L-3 and 206L-4 mast assembly, lost torque. The contact area between the mast nut and the bearing's inner race is too small, unlike Models 206B and 206L-1 mast nuts that have a larger contact area and do not cause this same problem.

Part time since overhaul-990 hours.

## SIKORSKY

**Sikorsky**
**Model S-76B**
**Mark II**

**Gear Door Attachment Fitting Failed**
**3233**

The following article was submitted by the FAA's Flight Standards District Office located in Windsor Locks, Connecticut.

> "During a landing approach, the left main landing gear door link attachment fitting (P/N 76209-02019-045) failed when the gear was extended. The submitter stated this component has a history of failure, and it has been replaced by the manufacturer with fittings which are structurally larger. The basic part number for the new part is the same with a -048 on the end. The submitter suggests that operators of this type aircraft (equipped with the -045 fitting) contact the manufacturer for availability of replacement of these fittings with the -048 fitting."

Part total time-2,041 hours.

# AMATEUR AND EXPERIMENTAL AIRCRAFT

## QUICKSILVER

**Quicksilver**
**Model MXL II**

**Weight And Balance**

The following article was submitted by the FAA's Regulatory and Program Operations Branch (AIR-220), located in Washington, D.C.

> "While certificating an amateur-built Quicksilver MXL II aircraft, an FAA inspector found that the center of gravity (CG) could be outside the aft limits (if the seat was either in the center or aft position and if the pilot did not weigh at least 220 pounds). (The standard weight of a pilot is 170 pounds.) The Quicksilver MXL II owners/flight manual is very explicit concerning the procedures for calculating weight and balance, and it cautions that certain changes to the configuration, including the aircraft seat position, will have a direct bearing on the CG. Additionally, the manual states (in bold print) "DO NOT ATTEMPT TO FLY YOUR AIRCRAFT IF THE WEIGHT AND CG LIMITS ARE EXCEEDED." Furthermore, the manual recommends contacting your Quicksilver technical representative if the CG limits are exceeded.
>
> Builders and pilots of all aircraft, especially amateur-built, should be aware of the critical limitations with regard to weight and balance. Prior to flight, it is incumbent upon the aircraft operator to know the aircraft configuration, and that this is a requirement of Title 14 of the Code of Federal Regulations (14 CFR) part 91, section 103, Preflight Action."

### ROTORWAY

**Rotorway Model 162 Exec** — **Broken Bearing Assembly Shaft Insert**

Information for this article resulted from investigation of an accident involving an amateur-built helicopter and was submitted by the FAA's Flight Standards District Office located in Richmond, Virginia.

> "The damage found during the investigation is as follows. The bearing assembly was found broken off inside the main rotor shaft, and the stub shaft fell out of the main rotor shaft. The main shaft, sprocket, and chain were pulled to the rear of the fiberglass oil-bath pan. The sprocket and chain dug into the fuel tank. The top of the main bearing was rotated aft and to the left. The collective scissor base support was broken and rotated up. The three-roller drive chain had jumped up one set of rollers on the sprocket.
>
> The main rotor shaft assembly had been replaced approximately 12 months prior to this accident. These replacement parts were supplied by a vender, other than Rotorway, and appeared to be of lesser quality than the originally-installed parts. This assembly did not meet the same specifications as that of the manufacturer's kit.
>
> It is recommended that all owners and operators of this type helicopter inspect the lower bearing shaft insert and review the manufacturer's technical data concerning vibration clues which may indicate a broken shaft."

Part total time-100 hours.

### SONERAI

**Sonerai Model 1** — **Carburetor Mixture Too Lean 7322**

The following article was submitted by Rosie's Flying Service located in Aurora, Missouri.

During takeoff, the pilot experienced a gradual loss of engine power. An emergency landing was initiated without further incident, and with only minor damage to the aircraft. An examination of the aircraft determined that the Posa carburetor on the 1790cc Volkswagen engine had been adjusted (inappropriate mixture of fuel to air) too lean. Inspection of the spark plugs substantiated this finding.

Part total time since overhaul-55 hours.

## AGRICULTURAL AIRCRAFT

### AIR TRACTOR

**Air Tractor Model AT501** — **Fuel Valve Failure 2823**

During a scheduled inspection, extreme difficulty was experienced (on several occasions) while attempting to operate the fuel shutoff valve.

When the fuel boost pump was operated, it was found that fuel pressure was not supplied to the engine supply line. After removing and disassembling the valve (P/N 50625-1), cam (used to position the internal plungers) was found broken. The broken parts were jammed into the outlet port of the valve, and the plungers (which were spring loaded to the "closed" position) prevented fuel flow to the engine.

If these parts had broken during aerial application operations, an engine failure would have occurred. The submitter speculated this failure was caused by high spring tension used on the plungers being applied to the cam. It was recommended all operators of this type aircraft take immediate action to inspect and replace these fuel shutoff valves, as necessary.

Part total time-1,355 hours.

# HOT AIR BALLOONS

## AEROSTAR

**Aerostar Model S-57A** | **Defective Fuel Plumbing 5102**

During a pressure test of the fuel system, fuel odor, or low pressure gas (LPG), was detected.

Further investigation revealed the plumbing was leaking through the sidewall sheathing. These flexible fuel lines (P/N 13864) were manufactured by Aeroquip and had a date stamp of "2Q93." This condition can present a very hazardous situation for balloon occupants during flight, and deserves immediate attention when an odor of fuel is detected. It would be wise to conduct a plumbing pressure test at every opportunity.

Part total time-128 hours.

# PROPELLERS AND POWERPLANTS

## GARRETT

**Garrett Models (As Listed Below)** | **Improper Maintenance 7200**

Airworthiness Directive (AD) 95-16-08 was issued by the FAA and became effective on September 5, 1995. This AD delineates improper maintenance accomplished by Flightline Maintenance, an FAA-certificated repair station located in Warton, Texas.

This AD affects TPE331-25, -43, -1, -2, -3, -5, -6, -8, -10, -11, and -12 series; -55B and -61A model turboprop engines; and TSE331-3U turboshaft engines. These engines are installed on, but not limited to, Mitsubishi MU-2B series; Construcciones Aeronauticas, S.A. (CASA) C-212 series; Jetstream 3101 and 3201 series; Fairchild SA226 and SA227 series; Prop-Jets, Inc., Model 400; Cessna Model 441; Twin Commander Aircraft Corp. 680, 690, and 695 series, and Model 681; Rockwell Commander or Ayres Corp. S-2R series; Short Brothers and Harland, Ltd. SC7; Dornier 228 series; Beech Aircraft Corp. 18 and 45 series and Models JRB-6, 3N, 3NM, 3TM, and B100; Pilatus PC-6 series; DeHavilland DH 104 Dove series; Grumman Models TS-2A; Grumman American Model G-164C; and Schweitzer Aircraft Corp. Model G-164 series aircraft.

Consult the AD for specific applicability and requirements.

Information for this article was provided by the FAA's Aircraft Maintenance Division (AFS-300), located in Washington, D.C., and was issued as a Flight Standards Information Bulletin (FSIB). This FSIB provides additional information which was not included in AD 95-16-08. The additional information involves improper maintenance performed by Flightline Maintenance on TPE331 series engines. AD 95-16-08 did not address engine accessories and the AD-modified components, which were "de-modified" by Flightline Maintenance.

The following are recommendations regarding maintenance performed by Flightline Maintenance.

> Inspect each engine to ensure correct configuration of engine accessory components (e.g. fuel pump and control, propeller pitch control, propeller governor, etc.), for the engine model specified on the

data plate. The TPE331-1-101Z engines modified by Flightline Maintenance are particularly suspect.

Inspect engine modifications and reworks required by AD 95-16-08 and accomplished prior to the maintenance performed by Flightline Maintenance to validate the continued compliance with AD's after maintenance by Flightline Maintenance.

The proponent of the referenced FSIB and the point of contact for reporting any findings is Mr. Joseph Costa of the FAA's Transport Aircraft Directorate, Propulsion Branch, located in Seattle, Washington. Mr. Costa may be contacted at telephone number (310) 627-5246, or FAX number (310) 627-5210.

## TELEDYNE CONTINENTAL

**Teledyne Continental Model TSIO-520** — **New Oil Filter Adapters 8550**

This engine was installed in a Cessna Model TU206 aircraft.

The text of this article is printed as received, with minor editorial changes.

"Recently, we were experiencing some inconsistent manifold pressures and fuel flows. We attributed some of this to an engine with high time (1,400 hours) and the releasing of carbon in the engine. We have thought, for some time, that there needs to be a filter on the turbocharger controller to remove some of this carbon. The presence of carbon in the controller interferes with its operation.

In the process of checking to see if the wastegate was functioning properly, this question was raised: Should we flush all oil hoses in the turbocharger system? This brought up the comment that the oil to the wastegate was already filtered. So what did we really expect to accomplish by flushing the oil hoses? We then began to wonder if it really was filtered or not.

We looked at the source of the oil supplied to the wastegate, from the oil pump housing (P/N 643716), and found that the port that we had used supplied unfiltered oil. This oil pump housing is the new part number which uses the full flow oil filter. We continued to study this new housing and found that just below the filter base, there is a second port that will provide filtered oil.

The "gotcha" is that the old oil pump housing (P/N 632770), which uses the other style of filter (the Cessna supplied oil filter adapter P/N 1250922-4), has only one port for filtered oil supply to the wastegate. This port is in the same general location as the unfiltered port on the new-style housing.

This problem began to develop as we routinely replaced our engines having old-style housings with an engine having the new style. We assumed that the filtered oil would come out of the port in the same location; however, this port is internally different. This port, when received from Continental, is plugged with an Allen head plug, where the filtered port was plugged with a square head plug (P/N 629518-1H) in both the new and old-style pump housings.

We are using a modified exhaust system which no longer requires the heat shield (P/N 1250007-1) and support (P/N 1250009-4). The installation of this shield and support requires two studs used by the old housing. The new housing uses only one of these studs. The second stud requires a bushing. This second stud and bushing may create a problem with installation of the elbow fitting into the filtered oil port.

We have seen no publication from Cessna or Continental warning of this potential problem, and we wanted to pass this along to everyone that might come into contact with this installation."

Bear in mind that this problem may also affect other aircraft using this engine installation."

Part total time as previously stated.

**Teledyne Continental Model TSIO-360** — **Oil Filler Port Corrosion 8550**

The submitter stated there was corrosion "flaking" off the inside of the oil filler cap and filler tube.

Although this corrosion should eventually be trapped by the oil filter, it may present other problems. Internal engine-oil ports may be blocked. An oil analysis may show a high metal content and lead to premature maintenance on an otherwise serviceable engine. The lubricating qualities of the oil may be reduced by added contamination. These parts are cadmium plated; however, due to their operating environment, they are susceptible to corrosion. These parts should be made of stainless steel, and the problem would be eliminated.

Part total time-2,135 hours.

### TEXTRON LYCOMING

**Textron Lycoming Model TIO-450** — **Oil Leak 8550**

After a 1-hour flight, the pilot reported oil leaking from the left engine.

An investigation disclosed that an exhaust stud on the Number 4 cylinder had "backed out" of the exhaust flange. The stud moved out far enough to contact a push-rod housing. A hole was worn in the push-rod housing which matched the diameter of the exhaust stud. Further inspection revealed a crack which extended from the exhaust port to the stud retention area. It was suspected, that the crack relieved the tension on the stud and vibration caused it to "backed out" of the flange. Four of the six cylinders were found cracked in a similar manner.

This condition could lead to complete loss of engine oil and the possibility of a fire. It is possible the cracks were caused by thermal shock related to rapid engine cooling during descent.

Part total time-342 hours.

## ACCESSORIES

### ENGINE OIL CONTAMINATION

While adding oil to an engine on a Beech, Model B300, King Air, the technician noticed particles accumulating in the funnel strainer. The funnel strainer was clean prior to this use.

An investigation revealed the particles came from the newly opened oil container and were attracted to a magnet, which indicated they were metallic. In this case, the oil was manufactured by Exxon, and was identified as "2380, lot no. B652, 11-29-95." Exxon and the FAA were notified of this problem, and an oil sample was supplied to Exxon. The engine oil was drained, and the crankcase was flushed, prior to replenishing the engine oil supply. Only the sharp eye of this submitter prevented possible engine damage and/or costly and unnecessary engine repairs when the next oil change revealed metal in the oil filter. It is always wise to use a funnel with a strainer when adding oil to an aircraft engine. Although the oil, in most cases, may be clean and of good quality, foreign objects such as bugs, dirt, etc., may enter the engine through

an unscreened funnel. If further information concerning this problem is received, it will be published in this publication.

# AIR NOTES

## AIRFRAME AND POWERPLANT MECHANIC PRIVILEGES

This article was submitted by Mr. Bill O'Brien, an Aviation Safety Inspector with the FAA Aircraft Maintenance Division (AFS-300) located in Washington, D.C.

> "Since the inception of the Federal regulations governing aviation, many questions have arisen concerning the privileges of an airframe and/or powerplant certificate.
>
> What are we allowed to do? Who may return the product to service? How can I avoid the "wrath" of the FAA? The answers to these and other questions are found in the Title 14 of the Code of Federal Regulations (14 CFR) parts 43 and 65, with the exception of the last question. If you read and understand the privileges and limitations of your certificate, and stay within those bounds, you will avoid the "wrath" of the FAA. Since the regulations are written with legal expertise, they are sometimes difficult to thoroughly understand. You are encouraged to contact your local FAA Flight Standards District Office for clarification of any point that is not fully understood.
>
> Second to accident investigation, writing violations is the least enjoyable job task of an FAA inspector. If you are in compliance with the regulations, both you and the inspector will have a lighter workload. Both may also sleep better at night. A full and complete understanding of the regulations governing your aviation privileges should keep your relationship with the airworthiness inspector on a cordial basis. Remember the inspector's goal is to gain compliance with the regulations, and if you are in compliance, neither of you will have a problem or an increased workload.
>
> For example, may a powerplant-rated mechanic overhaul and return to service an aircraft engine with an integral supercharger?
>
> The answer is NO. In accordance with part 43, appendix A (b)(2)(i), this is considered a major repair and requires an Inspection Authorization for return to service. 14 CFR part 65, section 65.87 specifically excludes major repairs and major alterations from the privileges of a powerplant-rated mechanic. The limitation of section 65.87 is referred to in 14 CFR part 43, section 43.7. Also offered for reference is 14 CFR part 1, section 1.1 which defines a major repair.
>
> This is only one example, and the number of other possibilities are infinite. With a full understanding of the rules which govern our trade, safety will be enhanced."

## ALERTS ON LINE

We have received several requests to make the information contained in this publication available electronically. Therefore, this publication is now available through the FedWorld Bulletin Board System (BBS), via the Internet.

You may directly access the FedWorld BBS at telephone number (703) 321-3339. To access AC 43-16, General Aviation Airworthiness Alerts, through the Internet, use the following address: "http://www.fedworld.gov/ftp.htm". This will open the "FedWorld File Transfer Protocol Search And Retrieve Service" screen. Page down to the heading "Federal Aviation Administration" and select "FAA-ASI". The file

names will begin with “ALT”, followed by three characters for the month, followed by two digits for the year (e.g. “ALTJUN96.TXT”). The extension “TXT” indicates the file is viewable on the screen and also available to download. In the future, we will use the Adobe Acrobat software program format to upload this monthly publication. At that time, they will appear with a “PDF” extension, and it will be necessary to download the files for viewing. This change is necessary to accommodate inclusion of the illustrations associated with various articles. The Adobe Acrobat Viewer is available for download from the Internet (free of charge) and will allow the files to be read.

Also available at this location are the Service Difficulty Reports which may be of interest.

The Regulatory Support Division (AFS-600) has established a home page on the Internet, through which the same information is available. The address for the AFS-600 home page is: “http://www.mmac.jccbi.gov/afs/afs600”. Also, this address has a large quantity of other information available. There are “hot buttons” to take you to other locations and sites where FAA Flight Standards Service information is available. Try it, you will like it. If problems are encountered, you can “E-mail” us at the following address.

Other requests have been received indicating a need to make the staff of this publication more available to our readers. To provide greater and more flexible access for you to offer information and ask questions, you may use any of the following methods to contact us:

**Editor:** Phil Lomax, AFS-640

**Telephone Number:** (405)954-6487

**FAX Number:** (405)954-4570 or (405)954-4748

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**Mailing Address:**
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ATTN: Maintenance Support Branch, AFS-640
P.O. Box 25082
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We hope this will allow you to contact us by a means which will be convenient and save some of your precious time. We welcome the submission of aircraft maintenance information via any form or format. Through this publication, you are provided the opportunity to inform the aviation community of problems you have encountered, as well as, bringing them to the attention of those who can resolve these problems. Your participation is vital to the Service Difficulty Reporting (SDR) program, and the more it is used the better and more reliable the end product, which is accurate maintenance information, will be.

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For your convenience, FAA Form 8010-4, Malfunction or Defect Report, will be printed in every issue of this publication.

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| | |
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| OPER. Certificate No. | |
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| 1. A/C Reg. No. | N- |

| Enter pertinent data | MANUFACTURER | MODEL/SERIES | SERIAL NUMBER |
|---|---|---|---|
| 2. AIRCRAFT | | | |
| 3. POWERPLANT | | | |
| 4. PROPELLER | | | |

5. SPECIFIC PART (of component) CAUSING TROUBLE

| Part Name | MFG. Model or Part No. | Serial No. | Part/Defect Location |
|---|---|---|---|
| | | | |

6. APPLIANCE/COMPONENT (Assembly that includes part)

| Comp/Appl Name | Manufacturer | Model or Part No. | Serial Number |
|---|---|---|---|
| | | | |

| Part TT | Part TSO | Part Condition | 7. Date Sub. |
|---|---|---|---|
| | | | |

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